

# Varicose veins in the legs

## The diagnosis and management of varicose veins

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**NICE clinical guideline 168**

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## Introduction

Varicose veins are dilated, often palpable subcutaneous veins with reversed blood flow. They are most commonly found in the legs. Estimates of the prevalence of varicose veins vary. Visible varicose veins in the lower limbs are estimated to affect at least a third of the population. Risk factors for developing varicose veins are unclear, although prevalence rises with age and they often develop during pregnancy.

In some people varicose veins are asymptomatic or cause only mild symptoms, but in others they cause pain, aching or itching and can have a significant effect on their quality of life. Varicose veins may become more severe over time and can lead to complications such as changes in skin pigmentation, bleeding or venous ulceration. It is not known which people will develop more severe disease but it is estimated that 3–6% of people who have varicose veins in their lifetime will develop venous ulcers.

There are several options for the management of varicose veins, including:

- advice and reassurance
- interventional treatments (endothermal ablation, foam sclerotherapy and surgery)
- compression hosiery.

In 2009/10 there were 35,659 varicose veins procedures carried out in the NHS. There is no definitive system for identifying which people will benefit the most from interventional treatment and no established framework within the NHS for the diagnosis and management of varicose veins. This has resulted in wide regional variations in the management of varicose veins in the UK. This guideline was developed with the aim of giving healthcare professionals guidance on the diagnosis and management of varicose veins in the legs, in order to improve patient care and minimise disparities in care across the UK.

The guideline will assume that prescribers will use a drug's summary of product characteristics to inform decisions made with individual patients.

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## Patient-centred care

This guideline offers best practice advice on the care of adults aged 18 years and over with varicose veins in the legs.

Patients and healthcare professionals have rights and responsibilities as set out in the [NHS Constitution for England](#) – all NICE guidance is written to reflect these. Treatment and care should take into account individual needs and preferences. Patients should have the opportunity to make informed decisions about their care and treatment, in partnership with their healthcare professionals. If someone does not have the capacity to make decisions, healthcare professionals should follow the [Department of Health's advice on consent](#), the [code of practice that accompanies the Mental Capacity Act](#) and the supplementary [code of practice on deprivation of liberty safeguards](#). In Wales, healthcare professionals should follow [advice on consent from the Welsh Government](#).

NICE has produced guidance on the components of good patient experience in adult NHS services. All healthcare professionals should follow the recommendations in [Patient experience in adult NHS services](#).

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## Key priorities for implementation

The following recommendations have been identified as priorities for implementation.

### ***Referral to a vascular service***

- Refer people to a vascular service<sup>[1]</sup> if they have any of the following.
- Symptomatic<sup>[2]</sup> primary or symptomatic recurrent varicose veins.
- Lower-limb skin changes, such as pigmentation or eczema, thought to be caused by chronic venous insufficiency.
- Superficial vein thrombosis (characterised by the appearance of hard, painful veins) and suspected venous incompetence.
- A venous leg ulcer (a break in the skin below the knee that has not healed within 2 weeks).
- A healed venous leg ulcer.

### ***Assessment and treatment in a vascular service***

#### **Assessment**

- Use duplex ultrasound to confirm the diagnosis of varicose veins and the extent of truncal reflux, and to plan treatment for people with suspected primary or recurrent varicose veins.

#### **Interventional treatment**

- For people with confirmed varicose veins and truncal reflux:
- Offer endothermal ablation (see [Radiofrequency ablation of varicose veins](#) [NICE interventional procedure guidance 8] and [Endovenous laser treatment of the long saphenous vein](#) [NICE interventional procedure guidance 52]).
- If endothermal ablation is unsuitable, offer ultrasound-guided foam sclerotherapy (see [Ultrasound-guided foam sclerotherapy for varicose veins](#) [NICE interventional procedure guidance 440]).

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- If ultrasound-guided foam sclerotherapy is unsuitable, offer surgery.

If incompetent varicose tributaries are to be treated, consider treating them at the same time.

### ***Non-interventional treatment***

- Do not offer compression hosiery to treat varicose veins unless interventional treatment is unsuitable.

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<sup>[1]</sup> A team of healthcare professionals who have the skills to undertake a full clinical and duplex ultrasound assessment and provide a full range of treatment.

<sup>[2]</sup> Veins found in association with troublesome lower limb symptoms (typically pain, aching, discomfort, swelling, heaviness and itching).

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# 1 Recommendations

The following guidance is based on the best available evidence. The [full guideline](#) gives details of the methods and the evidence used to develop the guidance.

The wording used in the recommendations in this guideline (for example words such as 'offer' and 'consider') denotes the certainty with which the recommendation is made (the strength of the recommendation). See [About this guideline](#) for details.

All recommendations relate to adults aged 18 years and over.

## 1.1 Information for people with varicose veins

1.1.1 Give people who present with varicose veins information that includes:

- An explanation of what varicose veins are.
- Possible causes of varicose veins.
- The likelihood of progression and possible complications, including deep vein thrombosis, skin changes, leg ulcers, bleeding and thrombophlebitis. Address any misconceptions the person may have about the risks of developing complications.
- Treatment options, including symptom relief, an overview of interventional treatments and the role of compression.
- Advice on:
  - weight loss (for guidance on weight management see [Obesity](#) [NICE clinical guideline 43])
  - light to moderate physical activity
  - avoiding factors that are known to make their symptoms worse if possible
  - when and where to seek further medical help.

1.1.2 When discussing treatment for varicose veins at the vascular service<sup>[3]</sup> tell the person:

- What treatment options are available.
- The expected benefits and risks of each treatment option.
- That new varicose veins may develop after treatment.
- That they may need more than 1 session of treatment.
- That the chance of recurrence after treatment for recurrent varicose veins is higher than for primary varicose veins.

## **1.2 Referral to a vascular service**

1.2.1 Refer people with bleeding varicose veins to a vascular service<sup>[3]</sup> immediately.

1.2.2 Refer people to a vascular service if they have any of the following.

- Symptomatic<sup>[4]</sup> primary or symptomatic recurrent varicose veins.
- Lower-limb skin changes, such as pigmentation or eczema, thought to be caused by chronic venous insufficiency.
- Superficial vein thrombosis (characterised by the appearance of hard, painful veins) and suspected venous incompetence.
- A venous leg ulcer (a break in the skin below the knee that has not healed within 2 weeks).
- A healed venous leg ulcer.

## **1.3 Assessment and treatment in a vascular service**

### **Assessment**

1.3.1 Use duplex ultrasound to confirm the diagnosis of varicose veins and the extent of truncal reflux, and to plan treatment for people with suspected primary or recurrent varicose veins.

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## Interventional treatment

1.3.2 For people with confirmed varicose veins and truncal reflux:

- Offer endothermal ablation (see [Radiofrequency ablation of varicose veins](#) [NICE interventional procedure guidance 8] and [Endovenous laser treatment of the long saphenous vein](#) [NICE interventional procedure guidance 52]).
- If endothermal ablation is unsuitable, offer ultrasound-guided foam sclerotherapy (see [Ultrasound-guided foam sclerotherapy for varicose veins](#) [NICE interventional procedure guidance 440]).
- If ultrasound-guided foam sclerotherapy is unsuitable, offer surgery.

If incompetent varicose tributaries are to be treated, consider treating them at the same time.

1.3.3 If offering compression bandaging or hosiery for use after interventional treatment, do not use for more than 7 days.

## Non-interventional treatment

1.3.4 Do not offer compression hosiery to treat varicose veins unless interventional treatment is unsuitable.

## 1.4 Management during pregnancy

1.4.1 Give pregnant women presenting with varicose veins information on the effect of pregnancy on varicose veins.

1.4.2 Do not carry out interventional treatment for varicose veins during pregnancy other than in exceptional circumstances.

1.4.3 Consider compression hosiery for symptom relief of leg swelling associated with varicose veins during pregnancy.

<sup>[3]</sup> A team of healthcare professionals who have the skills to undertake a full clinical and duplex ultrasound assessment and provide a full range of treatment

<sup>[4]</sup> Veins found in association with troublesome lower limb symptoms (typically pain, aching, discomfort, swelling, heaviness and itching).

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## 2 Research recommendations

The Guideline Development Group has made the following recommendations for research, based on its review of evidence, to improve NICE guidance and patient care in the future. The Guideline Development Group's full set of research recommendations is detailed in appendix N of the [full guideline](#).

### ***2.1 Natural history of varicose veins***

In people with varicose veins at CEAP (Clinical, etiological, anatomical and pathophysiological) stage C2 or C3, what are the factors that influence progression of the disease to CEAP stages C5 or C6?

#### **Why this is important**

The evidence review for the guideline showed a lack of high-quality evidence on the progression of varicose veins from CEAP stage C2 or C3 to more serious varicose veins disease. A large, observational, prospective cohort study, similar to the Framingham or Bonn veins studies, should be undertaken. The study should recruit patients with C2 and C3 disease and follow the progress of their disease for 5 years. Consideration should be given to including a genetic component in the study because genetic factors have not been studied on a large scale. The results of such a study should help to more accurately identify which patients are at risk of developing more serious disease so that interventions can be offered at an early stage to those who will benefit most.

### ***2.2 Compression as a management option***

What is the clinical and cost effectiveness of compression hosiery versus no compression for the management of symptomatic varicose veins?

#### **Why this is important**

Compression hosiery is widely used as first-line treatment for symptomatic varicose veins. In some areas of the UK a period of hosiery use is a precursor to referral to secondary care.

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Discomfort and difficulty in application may cause people to stop wearing compression hosiery or wear it only occasionally. The current evidence for the benefit of compression hosiery is weak. There is little evidence of an impact on symptom relief or an improvement in quality of life. It is therefore not possible to calculate the cost effectiveness of compression hosiery.

A multicentre trial randomising compression hosiery versus no compression in patients with symptomatic varicose veins is needed. The trial should evaluate quality of life, including symptom reduction, and measure adherence with compression hosiery. In addition the trial should investigate the impact of compression on disease progression and the need for subsequent intervention.

## ***2.3 Compression after interventional treatment***

What is the clinical and cost effectiveness of compression bandaging or hosiery after interventional treatment for varicose veins compared with no compression? If there is benefit, how long should compression bandaging or hosiery be worn for?

### **Why this is important**

The benefit of compression after interventional treatment for varicose veins is unclear. A well-conducted, multicentre, randomised controlled trial (RCT) of compression after interventional treatment would help determine whether compression is beneficial, and if so, what type is best and how long it should be worn for. The trial should include patients who have had 1 of the 3 main interventional treatments: endothermal ablation, ultrasound-guided foam sclerotherapy or surgery. The patients should be divided into 3 groups based on the type of intervention they have had. There should be 6 RCT arms, 1 arm with compression and 1 arm without, in each of the 3 patient groups. Each arm should have subgroups for compression type and duration. Adherence to compression treatment and the impact of adherence on effectiveness should also be evaluated. A cost-effectiveness analysis should be performed. If compression is beneficial, such a trial should help improve quality of life for people with varicose veins and reduce the longer-term need for retreatment.

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## **2.4 Truncal treatment with or without concurrent tributary treatment**

What is the clinical and cost effectiveness of concurrent phlebectomies or foam sclerotherapy for varicose tributaries during truncal endothermal ablation for varicose veins compared with:

- truncal endothermal ablation without concurrent phlebectomies or foam sclerotherapy?
- truncal endothermal ablation with phlebectomies or foam sclerotherapy, if needed, 6–12 weeks later?

### **Why this is important**

Conventional truncal stripping under general anaesthetic involves synchronous phlebectomies of varicose tributaries, and in ultrasound-guided foam sclerotherapy truncal and tributary veins are treated concurrently. In contrast, endothermal ablation may be performed alone to obliterate truncal incompetence, or synchronously with phlebectomies or foam sclerotherapy and current practice varies.

Synchronous tributary treatment ensures a single treatment episode, and the removal of all symptomatic varicosities leads to a better immediate quality of life, but this takes longer and thus may be associated with increased morbidity. Deferred tributary treatment may reduce morbidity, and also mean that some patients do not need tributary treatment (or need fewer tributary treatments on smaller veins). However, it involves 2 interventions for patients who need tributary treatment. Omitting tributary treatments entirely ensures a single treatment episode, but it is unclear whether remaining varicosities will persist and impair quality of life.

At present there is limited evidence from 1 small-scale (n=50) study on the use and timing of tributary treatments after truncal endothermal ablation. There is a need for practice to be based on empirical evidence from a large and sufficiently powered RCT comparing all 3 main intervention options (no tributary treatment, concurrent tributary treatment and delayed tributary treatment).

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## ***2.5 Optimal interventional and conservative treatments at different stages of disease***

What is the optimal treatment (compression, surgery, endothermal ablation or foam sclerotherapy) for varicose veins at each of the CEAP stages, that is CEAP stages 2–3, CEAP stage 4 and CEAP stages 5–6?

### **Why this is important**

Much of the research into the optimum treatment for varicose veins has involved patients with varicose veins in CEAP stages C2 and C3, so little is known of the relative efficacies of treatment at the more severe stages of disease. Furthermore, some studies have included patients with varicose veins at a range of stages without subgrouping, which may conceal important differences in efficacy between different treatments at different stages of disease. Hence current treatment recommendations, which do not differentiate between patients with varicose veins at different stages, may not be equally effective for all patients.

A large-scale RCT that compares the 4 main treatments (compression, surgery, endothermal ablation and foam sclerotherapy) in subgroups with varicose veins at different stages is needed. The use of CEAP to categorise the disease stages is not ideal because higher CEAP stages do not necessarily indicate greater severity. However, other methods of categorisation are even more problematic. Quality-of-life measures are unlikely to reflect severity of disease because of variations in perception of symptoms. In addition, measuring the degree of venous reflux would necessitate a method of quantifying reflux in the superficial venous system in a way that adequately reflects disease severity, and such a method does not currently exist.

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## 3 Other information

### 3.1 Scope and how this guideline was developed

NICE guidelines are developed in accordance with a [scope](#) that defines what the guideline will and will not cover.

#### How this guideline was developed

NICE commissioned the National Clinical Guideline Centre to develop this guideline. The Centre established a Guideline Development Group (see [section 4](#)), which reviewed the evidence and developed the recommendations.

The methods and processes for developing NICE clinical guidelines are described in [The guidelines manual](#).

### 3.2 Related NICE guidance

Further information is available on the [NICE website](#).

#### General

- [Patient experience in adult NHS services](#). NICE clinical guidance 138 (2012).

#### Condition-specific

- [Ultrasound-guided foam sclerotherapy for varicose veins](#). NICE interventional procedure guidance 440 (2013).
- [Promoting physical activity in the workplace](#). NICE public health guidance 13 (2008).
- [Physical activity and the environment](#). NICE public health guidance 8 (2008).
- [Obesity](#). NICE clinical guideline 43 (2006).
- [Four commonly used methods to increase physical activity](#). NICE public health guidance 2 (2006).

- [Endovenous laser treatment of the long saphenous vein](#). NICE interventional procedure guidance 52 (2004).
- [Transilluminated powered phlebectomy for varicose veins](#). NICE interventional procedure guidance 37 (2004).
- [Radiofrequency ablation of varicose veins](#) NICE interventional procedure guidance 8 (2003).

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## About this guideline

NICE clinical guidelines are recommendations about the treatment and care of people with specific diseases and conditions in the NHS in England and Wales.

NICE guidelines are developed in accordance with a [scope](#) that defines what the guideline will and will not cover.

This guideline was developed by the National Clinical Guideline Centre, which is based at the Royal College of Physicians. The Centre worked with a Guideline Development Group, comprising healthcare professionals (including consultants, GPs and nurses), patients and carers, and technical staff, which reviewed the evidence and drafted the recommendations. The recommendations were finalised after public consultation.

The methods and processes for developing NICE clinical guidelines are described in [The guidelines manual](#).

## ***Strength of recommendations***

Some recommendations can be made with more certainty than others. The Guideline Development Group makes a recommendation based on the trade-off between the benefits and harms of an intervention, taking into account the quality of the underpinning evidence. For some interventions, the Guideline Development Group is confident that, given the information it has looked at, most patients would choose the intervention. The wording used in the recommendations in this guideline denotes the certainty with which the recommendation is made (the strength of the recommendation).

For all recommendations, NICE expects that there is discussion with the patient about the risks and benefits of the interventions, and their values and preferences. This discussion aims to help them to reach a fully informed decision (see also [Patient-centred care](#)).

## **Interventions that must (or must not) be used**

We usually use 'must' or 'must not' only if there is a legal duty to apply the recommendation. Occasionally we use 'must' (or 'must not') if the consequences of not following the recommendation could be extremely serious or potentially life threatening.

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## **Interventions that should (or should not) be used – a 'strong' recommendation**

We use 'offer' (and similar words such as 'refer' or 'advise') when we are confident that, for the vast majority of patients, an intervention will do more good than harm, and be cost effective. We use similar forms of words (for example, 'Do not offer...') when we are confident that an intervention will not be of benefit for most patients.

## **Interventions that could be used**

We use 'consider' when we are confident that an intervention will do more good than harm for most patients, and be cost effective, but other options may be similarly cost effective. The choice of intervention, and whether or not to have the intervention at all, is more likely to depend on the patient's values and preferences than for a strong recommendation, and so the healthcare professional should spend more time considering and discussing the options with the patient.

## ***Other versions of this guideline***

The full guideline, 'Ulcerative colitis: management in adults, children and young people' contains details of the methods and evidence used to develop the guideline. It is published by the National Clinical Guideline Centre.

The recommendations from this guideline have been incorporated into a [NICE Pathway](#).

We have produced [information for the public](#) about this guideline.

## ***Implementation***

[Implementation tools and resources](#) to help you put the guideline into practice are also available.

## ***Your responsibility***

This guidance represents the view of NICE, which was arrived at after careful consideration of the evidence available. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. However, the guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of

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the individual patient, in consultation with the patient and/or guardian or carer, and informed by the summaries of product characteristics of any drugs.

Implementation of this guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity and foster good relations. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties.

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